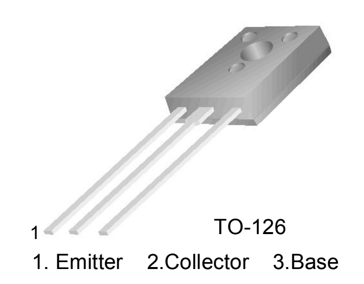


March 2008

KSE13003
NPN Silicon Transistor

High Voltage Switch Mode Applications

- High Voltage Capability
- High Speed Switching
- Suitable for Switching Regulator and Motor Control



1. Emitter 2.Collector 3.Base

Absolute Maximum Ratings* T_C = 25°C unless otherwise noted **(notes_1)**

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	700	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current (DC)	1.5	A
I_{CP}	Collector Current (Pulse)	3	A
I_B	Base Current	0.75	A
P_C	Collector Dissipation (T_C = 25°C)	20	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-65 ~ 150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.
NOTES_1:
1) These ratings are based on a maximum junction temperature of 150°C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

h_{FE} Classification

Classification	H1	H2	H3
h_{FE}*	9 ~ 16	14~ 21	19 ~ 26

* Test on V_{CE} = 2V, I_C = 0.5A.

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 5mA, I_B = 0	400			V
I_{EBO}	Emitter Cut-off Current	V_{EB} = 9V, I_C = 0			10	μA
h_{FE}	*DC Current Gain	V_{CE} = 2V, I_C = 0.5A V_{CE} = 2V, I_C =1A	8 5		40	
V_{CE}(sat)	*Collector Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A I_C = 1A, I_B = 0.25A I_C = 1.5A, I_B = 0.5A			0.5 1 3	V V V
V_{BE}(sat)	*Base Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A I_C = 1A, I_B = 0.25A			1 1.2	V V
C_{ob}	Output Capacitance	V_{CB} = 10V , f = 0.1MHz		21		pF
f_T	Current Gain Bandwidth Product	V_{CE} = 10V, I_C = 0.1A	4			MHz
t_{ON}	Turn On Time	V_{CC} =125V, I_C = 1A I_{B1} = 0.2A, I_{B2} = - 0.2A R_L = 125W			1.1	ms
t_{STG}	Storage Time				4.0	ms
t_F	Fall Time				0.7	ms

* Pulse Test: Pulse Width=5ms, Duty Cycle≤10%

Package Marking and Ordering Information

Device Item (notes_2)	Device Marking	Package	Packing Method	Remarks
KSE13003H1ASTU	1 E13003	TO-126	TUBE	
KSE13003H2ASTU	2 E13003	TO-126	TUBE	
KSE13003H3ASTU	3 E13003	TO-126	TUBE	

Notes_2 :

1) The Affix "-H1/-H2/-H3" means the hFE classification.

2) The Sufix "-STU" means the TO126 short lead package and the Tube packing method, which can be on fairchildsemi website at http://www.fairchildsemi.com

Typical Performance Characteristics

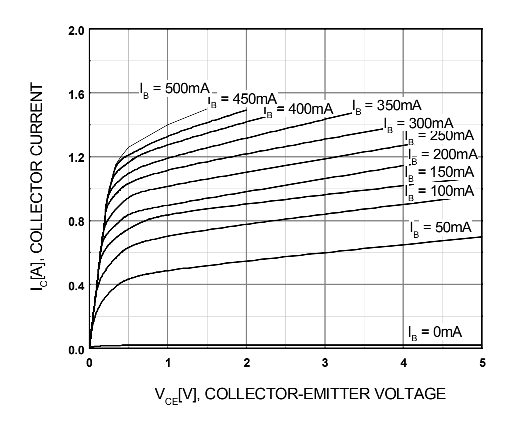


Figure 1. Static Characteristic

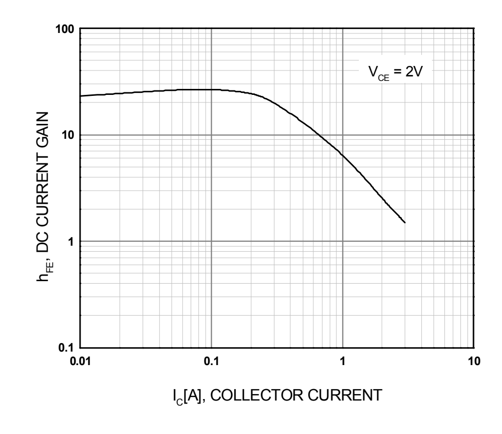


Figure 2. DC current Gain

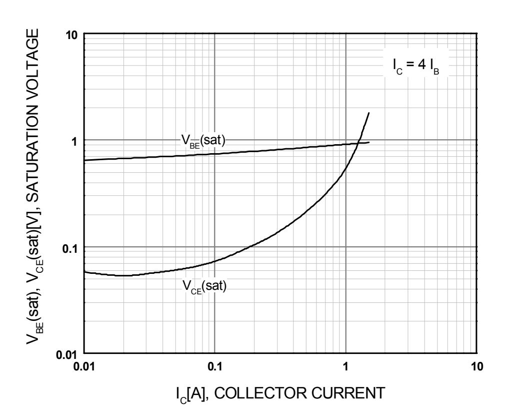


Figure 3. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

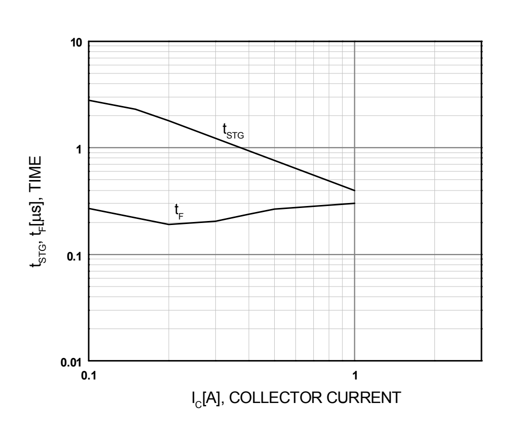


Figure 4. Switching Time

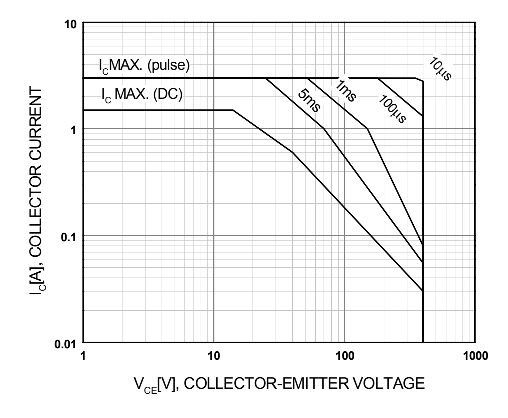


Figure 5. Safe Operating Area

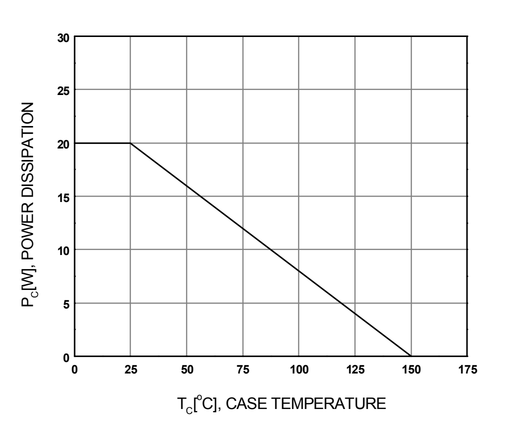


Figure 6. Power Derating





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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
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